



Nurse Advise-ERR™

Educating the healthcare community about safe medication practices

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Fatal errors from concomitant use of heparin products

Low molecular weight (LMW) heparin products such as **FRAGMIN** (dalteparin), **LOVENOX** (enoxaparin), and **INNOHEP** (tinzaparin) offer effective prophylaxis against and treatment of deep vein thrombosis. These products also help prevent ischemic complications in unstable angina and non-Q-wave myocardial infarction. LMW heparin has a much longer duration of action than the more traditional form of heparin (unfractionated), so its effects are active in the body for up to 24 hours. It also has a more predictable therapeutic effect than unfractionated heparin, so less laboratory monitoring is required for dosing. But without safeguards, unintended concomitant use of these two forms of heparin can occur, potentially causing serious patient harm, even death.

In one reported case, a patient with unstable angina died from internal bleeding after he received Fragmin in the emergency department (ED), and then a thrombolytic and IV heparin immediately upon admission to a cardiac care unit after an acute myocardial infarction was confirmed. Failure to clearly communicate the drugs given in the ED led to starting the heparin infusion too

soon after administering Fragmin. In another case, a physician accidentally ordered both Lovenox and a heparin infusion for a young man who was admitted at night with an upper extremity thrombosis. The pharmacy was closed, but both products were available in a nighttime dispensing cabinet and given to the patient. The patient developed intracranial bleeding and died despite aggressive treatment.

Failure to clearly communicate the drugs given in the ED led to starting the heparin infusion too soon after the Fragmin dose.

A more recent error led to the death of an elderly woman who had a history of atrial fibrillation, hypertension, and constipation. Lovenox and warfarin were prescribed upon admission. After a colonoscopy was scheduled, warfarin was discontinued and a heparin infusion was ordered. But Lovenox was not discontinued. The order for the heparin infusion was never sent to the pharmacy because the solution was stocked on the unit. The patient's aPTT was greater than 90 seconds several hours after she received both heparin and Lovenox. The heparin infusion was decreased, but by morning, the patient had developed internal bleeding and she died despite immediate discontinuation of both heparin products. See **check it out!** for recommendations on how to avoid these serious errors.

check it out! ✓✓✓✓

To avoid concomitant use of low molecular weight (LMW) heparin and unfractionated heparin:

- ✓ **Become familiar** with LMW heparin products used in your facility.
- ✓ **Send all orders** to the pharmacy (even if heparin products are unit stock) so the pharmacy computer can catch unrecognized duplication.
- ✓ **Review** the patient's current and recent drug therapy record before administering any heparin product.
- ✓ **Use reminders** on heparin protocols/order forms to discontinue LMW heparin before starting heparin.
- ✓ **Ask your pharmacists** to determine how long to wait before initiating heparin therapy if a patient has received a prior dose of LMW heparin (e.g., 8 to 24 hours, depending on the dose), and list that time-frame in your heparin protocols.
- ✓ **Display alerts** on automated dispensing cabinet screens (if applicable) to warn about concomitant use of heparin products.
- ✓ **Administer heparin** only after a pharmacist has reviewed the order, or after two nurses have checked the order and the patient's drug profile.
- ✓ **Alert pharmacy** to all heparin (LMW and unfractionated) doses given to ED patients who are admitted to the hospital so the drugs can be recorded in the pharmacy computer.
- ✓ **Mention all doses** of LMW heparin given to ED patients during verbal report to the admitting nurse on an inpatient unit, and clearly document all doses administered.

safetywire

⚡ PCA means "patient-controlled analgesia"...right? A physician wrote an order to "change PCA to IV." The pharmacists and nurses assumed it had already been carried out because the patient was currently receiving pain medication via a patient-controlled analgesia (PCA) pump. But the prescriber intended "PCA" to mean procainamide, and had wanted to change the route from oral to IV since the patient was now NPO. As a result, the

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HazardAlert!**Clusters of "positive PPD skin tests" due to intradermal injection of Td**

⚠️ Tetanus diphtheria toxoid (Td) was injected intradermally into two groups of patients instead of a purified protein derivative (PPD) skin test. The resulting skin reactions were read as positive PPDs, and the patients were started on isoniazid (INH) for tuberculosis prophylaxis. The errors were discovered after a cluster of "positive PPD skin tests" led to reviewing the lot numbers of the products given. INH was stopped on all patients after negative PPD results upon retesting.



the problem. The products involved in these errors were both manufactured by Aventis Pasteur. Both products come in the same size cartons and have a circle around the number "5" on the front label (5 TU [tuberculin units] on the PPD box; 5 mL on the Td box). Although label colors differ, the circles may distract nurses from reading the label correctly, especially if both products sit side by side in the refrigerator.

To avoid mix-ups, store these products separately in the refrigerator and ask pharmacy to purchase one of the products from another manufacturer, if possible, so they look different. But alert staff if any change in the product's appearance occurs so that the more familiar looking package is not picked up in error.

in the news. . .

Raising the Bar (Code). You may have heard about the new FDA-proposed rule that would require a bar code with a unique National Drug Code (NDC) number on each medication package to identify it when scanned by a device designed for that purpose. These bar codes would be required on all prescription drugs and on non-prescription drugs commonly used in hospitals. This sets the stage for easier implementation of bar-code scanning technology used at the bedside to verify the patient, drug, dose, time, and route of administration, as well as electronically document all drug administration. FDA is seeking comments on the proposed rule, so it may be months before a final rule is published, and up to 3 years before bar codes are on all packages since there is a phase-in period. However, you can prepare for this technology now by getting a team together to complete a readiness assessment available free at <http://www.ismp.org/PDF/PathwaySection3.pdf>. Entitled **Assessing Bedside Bar-Coding Readiness**, this tool will help you identify where better preparation is needed in your facility to pave the way for this important technology.

how to report errors

Share your medication safety stories and error reports in confidence by calling ISMP at 800-FAIL-SAF(E), via our web site (www.ismp.org), or through e-mail (nursing@ismp.org). Reporter identity and location remain strictly confidential and are never published. Anonymous reports are also accepted.

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safetywire continued

patient did not receive procainamide for 30 hours. Abbreviations may save time, but it's safest to spell out drug names. When patients become NPO, review their medications and follow up with physicians if the route of administration needs to be changed for crucial medications (such as procainamide).



HIPAA Tip. The Health Information Portability and Accountability Act (HIPAA) Privacy Rule was enacted last month to protect patients' medical information. By now, practitioners have been taught the methods used to maintain patient confidentiality. But pitfalls exist, even for the most conscientious practitioner. One pitfall is faxing patient information to the wrong fax number, especially if speed dial options are used. For example, you could accidentally send a patient's medication orders to dietary, or worse, to an outside facility. To protect patient privacy, don't use speed dial to send information to nonclinical departments or outside facilities. Dial these numbers manually. If you dial incorrectly, you're more likely to reach a voice line than a fax line and realize your error. It's safest to set up the speed dial option to connect to just one clinical department to which you fax most often (e.g., pharmacy).

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